



2010 REASONS TO DO BUSINESS IN CANADA



CANADA SHINES WITH SOLAR EXPERTISE

Now more than ever, Canadians are harnessing the sun's energy. From Canada's installed capacity of photovoltaic and solar thermal technology through to investment, technology development, manufacturing, and of course, installation, significant developments have occurred in this industry, though vast opportunities to further develop this sector remain. Canadian solar companies and technology developers have already demonstrated their expertise across the global value chain, with manufacturing facilities that produce silicon – the key ingredient of photovoltaic (PV) panels – all the way to the deployment of PV and solar thermal units across the country, in both the coldest and most temperate regions.

Olympic and Paralympic Village Vancouver Solar Systems and Technologies

The Vancouver 2010 Olympic and Paralympic Winter Games exemplify another large scale success for the deployment of unique and highly effective solar energy systems. The Olympic and Paralympic Village Vancouver is comprised of LEED™ certified buildings (Leadership in Energy and Environmental Design) which are connected to the National Energy Utility. This allows for a significant reduction in the structure's energy usage and greenhouse gas emissions using high quality building envelope design and hot water

radiant heating systems. Surplus energy generated by solar thermal modules located on the roof tops of three Vancouver Olympic Village buildings is utilized for other purposes.



Courtesy Danny Singer for The Challenge Series

Rooftop solar thermal units are a clean source of energy, while the use of radiant hot water heating systems ensures a higher level of comfort and lower energy use compared to conventional space heating options. By some estimates, the buildings of the Olympic Village will achieve 30-70% greater energy efficiency when compared to standards buildings built according to minimum codes. Passive design, district energy, efficient appliances & fixtures and solar energy have a



significant and financially viable impact on energy consumption. This community will be the first completed LEED™ certified Gold sustainable neighbourhood in Canada – including a Net Zero building which means that it can generate as much energy as it consumes.

Solar thermal arrays are mounted on the roofs of three Olympic Village buildings. Solar thermal technology uses energy from the sun for domestic air and hot water heating. During peak sunlight periods, the solar systems generate a surplus of heat energy; more than what the building will

require. To prevent a waste of clean energy, the surplus heat from the solar arrays is sold to the local energy utility through energy transfer stations. This allows for it to be used in other buildings. In fact, an effective energy transfer system such as this one means that any small or medium sized producer of thermal energy with excess capacity can sell their surplus energy to the power grid. It demonstrates the significant benefits to the individual, community, and major energy utilities of adopting renewable energy generation.



Advanced Neighbourhoods, Advanced Technologies

Showcasing Canadian solar energy capabilities is also successfully underway in two solar-powered neighbourhoods – in Waterloo, Ontario, and Okotoks, Alberta. In Alberta, the Drake Landing Solar Community's unique feature is that

90% of space heating needs for the community's 52 single-detached homes will be met by solar thermal energy, a feat unprecedented anywhere else in the world. The community also features the first major implementation in North America of a technology known as seasonal solar thermal energy storage.

Canada's solar industry is an innovator in the solar thermal field range of scalable and versatile

technology products, and an array of design and installation services that include expertise in photovoltaic technology (PV), which refers to solar cells (panels) that convert solar energy, in the form of sunlight and UV radiation, directly into energy. PV can be deployed for a range of applications, from parking meters to the roofs of houses, all the way to large solar PV 'farms'. Much like home computers, PV panels are experiencing decreasing technology costs while achieving greater efficiency with more space conscious designs. The Canadian PV solar sector demonstrates leadership in the areas of:

- solar power LED technology
- PV concentrator technology
- cold climate expertise
- PV products for developing country opportunities
- design/development of solar charges, and power sources for portable power and consumer electronics
- raw material manufacturing (silicon)
- industry leading solar charge controllers, inverters, rectifiers and other balance of system components
- PV manufacturing equipment
- Installation of off-grid power systems for rural telecommunication systems

Solar Thermal units are specifically designed to collect solar radiation to heat air and water. For residential purposes, the term usually refers to solar hot water panels, but on a larger scale this technology can also be used in solar thermal power plants to generate electricity by heating water to produce steam which drives a turbine. The Canadian solar thermal sector has developed competitive strengths in:

- easy-to-install, off-the-shelf solar water heaters
- freeze-protected designs for extreme climate conditions
- solar heating systems for recreation centre swimming pools

- solar water heating systems for commercial and multi-unit applications
- concentrated solar power collectors designed to combine solar heat and power generation in a unit
- underground storage technology to compensate for winter conditions
- wall mounted solar collector for space heating and industrial drying applications

The Canadian Trade Commissioner Service (TCS)

The Canadian Trade Commissioner Service is a key resource for anyone interested in doing business internationally. Our global network of trade offices and dedicated officers are there to provide assistance and resources to maximize engagement with companies and government. For more information on Canadian expertise, we encourage you to contact one of Canada's local Trade Commissioners. You can access their knowledge and networks at:

www.tradecommissioner.gc.ca

For More Information...

Foreign Affairs and International Trade Canada:

www.dfait-maeci.gc.ca

Industry Canada, Industry Sector:

www.ic.gc.ca

Canada Mortgage and Housing Corporation:

www.cmhc-schl.gc.ca

National Research Council Canada, Industrial Research Assistance Program:

www.nrc-cnrc.gc.ca/eng/ibp/irap.html

Natural Resources Canada, Canadian Forest Service:

cfs.nrcan.gc.ca

Natural Resources Canada, CanmetENERGY:

canmetenergy.nrcan.gc.ca

Canada Solar Industries Association:

www.cansia.ca